LISTING OF CLAIMS

CLAIMS

What is claimed is:

1. (previously presented) An information processing apparatus comprising means for creating a digest of a document a layout of which is determined, when said layout being too large to fit in a display screen of a display device or when a document reader requires said document to be zoomed for reading characters displayed on the display device, the document including a plurality of regions, each region including one or more display elements, the means for creating comprising:

means for selecting the display elements based on display priorities of the display elements, and for deciding all of selected display elements as a display content of a digest screen under a condition where a total display area of all of the selected display elements does not exceed a required display area;

means for setting a merging relationship among the regions by deciding a merging region, with which a region not being displayed on the digest screen is merged, from among regions displayed on the digest screen based on layout information for the regions in the document, all of the regions being included in the document; and

means for ensuring access to information lost by creating the digest and ensuring said digest fits optimally on said display device.

2. (Original) The information processing apparatus according to claim 1, further comprising means for deciding, as a display content of a detail screen, a region group including the regions displayed on the digest screen and the region merged with the displayed regions in response to that a detail display of the displayed regions is required.

3. (Original) The information processing apparatus according to claim 2, further comprising means for creating control information for controlling a display of the detail screen, wherein the

means for deciding the display content of the detail screen creates a digest of the detail screen based on the control information when the region group is too large to fit in the required display area.

4. (Original) The information processing apparatus according to claim 1, wherein the means for deciding the display content of the digest screen further includes means for changing the display content of the digest screen based on an operation of a user.

5. (Original) The information processing apparatus according to claim 4, wherein the changing means includes means for automatically changing the display content of the digest screen, accompanying the operation of the user.

6. (Withdrawn) An information processing system for creating a digest of a document a layout of which is determined, the system comprising:

a proxy server including:

digest screen display priority information creating means, for executing program code recorded in a storage device, for obtaining display priorities of display elements based on attributes of display elements belonging to each region of an inputted Web page formed of a plurality of regions, for preparing information concerning display priorities, and for dividing an HTML document of the inputted Web page into said regions of semantic clusters, and for imparting a significance forming a display priority for each of the regions, and

a digest screen region layout information creating means 42 for executing program code recorded in the storage device to create layout information for the regions, utilized when setting a merging relationship between a display area and a non-display area on a digest screen in accordance with a predetermined rule for ensuring access to the non-display area by a user;

information processing apparatus including digest screen display content deciding means for executing program code recorded in the storage device to select display elements based on the

display priorities of the display elements, and to decide all selected display elements as display content of applicants respectfully state digest screen under a condition where a total display area of all of the selected display elements does not exceed a required display area, comprising digest screen display content changing means 48 to change display content of the digest screen based on operations of the user;

digest screen region merging relationship setting means for executing program code recorded in the storage device to decide, after the display content of the digest screen is determined, a merging region, with which any region that is not displayed on the digest screen at all is merged, from among the regions displayed on the digest screen, and utilize layout information for the regions, created by the digest screen region layout information creating means ;

detail screen display content deciding means for executing program code recorded in the storage device to decide, as a display content of the detail screen, a region group formed of regions displayed on the digest screen and merged regions merged with the displayed regions in response to that a detail display of the displayed regions is required, and referring to the merging relationship among the regions set by the digest screen region merging relationship setting means , and when the regions cannot be fitted within an acceptable display area selects display elements based on the display priorities obtained by detail screen display priority information creating means , thus creating the digest of the detail screen and setting the merging relationship among the regions on the detail screen by employing detail screen region layout information creating means and detail screen region merging relationship setting means ; and

control information creating means comprising:

detail screen display priority information creating means for executing program code recorded in the storage device performing the function of said digest screen display priority information creating means for different target display elements,

detail screen region layout information creating means for executing program code recorded in the storage device performing function of the digest screen region layout information creating means for said different target display elements,

detail screen region merging relationship setting means for executing program code recorded in the storage device performing functions of the digest screen region merging relationship setting means for said different target display elements.

7. (Withdrawn) The system according to claim 6,

wherein the operation of the user comprises operations performed directly for the digest screen and performed indirectly for the detail screen,

wherein changes of the digest screen consist of any combinations of changes taken from a group of changes consisting of:

enlargement of a specific region,
reduction of a specific region,
deletion of a specific region,
display of a specific invisible region, and
selection of a specific region;

wherein said display area is a display area required directly by a user or indirectly by the information processing apparatus;

wherein a particular region having low priority is not displayed on the digest screen, and further comprises merging said particular region with another display region in accordance with a predetermined rule for the purpose of ensuring accesses to the particular region by the user.

wherein regions displayed on the digest screen include display elements displayed on the digest screen referred to as "visible regions," and regions not displayed on the digest screen referred to as "invisible regions"; and

wherein merging relationship of invisible regions merged with the other regions are referred to as "merged regions," and merging relationship of visible regions that merge the merged regions are referred to as "merging regions".

8. (previously presented) A method comprising creating a digest of a document a layout of which is determined, when said layout being too large to fit in a display screen of a display device or when a document reader requires said document to be zoomed for reading characters displayed on the display device, the document including a plurality of regions, each region including one or more display elements, the step of creating comprising the steps of:

selecting the display elements based on display priorities of the display elements, and for deciding all of selected display elements as a display content of a digest screen under a condition where a total display area of all of the selected display elements does not exceed a required display area;

setting a merging relationship among the regions by deciding a merging region, with which a region not being displayed on the digest screen is merged, from among regions displayed on the digest screen based on layout information for the regions in the document, all of the regions being included in the document; and

ensuring access to information lost by creating the digest and ensuring said digest fits optimally on said display device.

9. (Original) The method according to claim 8, further comprising the step of deciding, as a display content of a detail screen, a region group including the regions displayed on the digest screen and the region merged with the displayed regions in response to that a detail display of the displayed regions is required.

10. (Original) The method according to claim 9, further comprising the steps of: creating control information for controlling a display of the detail screen; and creating a digest of the detail screen based on the control information when the region group is too large to fit in the required display area.

11. (Original) The method according to claim 8, further comprising the step of changing the display content of the digest screen based on an operation of a user.

12. (previously presented) A program comprising code for creating a digest of a document a layout of which is determined, when said layout being too large to fit in a display screen of a display device or when a document reader requires said document to be zoomed for reading characters displayed on the display device, the document including a plurality of regions, each region including one or more display elements, the program allowing a computer to realize:

a function to select the display elements based on display priorities of the display elements, and to decide all of selected display elements as a display content of a digest screen under a condition where a total display area of all of the selected display elements does not exceed a required display area; and

a function to set a merging relationship among the regions by deciding a merging region, with which a region not being displayed on the digest screen is merged, from among regions displayed on the digest screen based on layout information for the regions in the document, all of the regions being included in the document; and

a function to ensure access to information lost by creating the digest and ensuring said digest fits optimally on said display device.

13. (Original) The program according to claim 12, wherein the program further allows the computer to realize a function to decide, as a display content of a detail screen, a region group including the regions displayed on the digest screen and the region merged with the displayed regions in response to that a detail display of the displayed regions is required.

14. (Original) The program according to claim 13, wherein the program further allows the computer to realize: a function to create control information for controlling a display of the detail screen; and a function to create a digest of the detail screen based on the control information when the region group is too large to fit in the required display area.

15. (Original) The program according to claim 12, wherein the program further allows the computer to realize a function to change the display content of the digest screen based on an operation of a user.

16. (Original) A computer program product comprising a computer usable medium having computer readable program code means embodied therein for causing creation of a digest of a document a layout of which is determined, the computer readable program code means in said computer program product comprising computer readable program code means for causing a computer to effect the functions of claim 1.

17. (Withdrawn) A computer program product comprising a computer usable medium having computer readable program code means embodied therein for causing creation of a digest of a document a layout of which is determined, the computer readable program code means in said computer program product comprising computer readable program code means for causing a computer to effect the functions of claim 6.

18. (Original) An article of manufacture comprising a computer usable medium having computer readable program code means embodied therein for causing creation of a digest of a document a layout of which is determined, the computer readable program code means in said article of manufacture comprising computer readable program code means for causing a computer to effect the steps of claim 8.

19. (previously presented) A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for creating a digest of a document a layout of which is determined, said method steps comprising the steps of claim 8.

20. (Previously presented) The information processing apparatus according to claim 1, further comprising at least one limitation taken from a group of limitations consisting of:

means for deciding, as a display content of a detail screen, a region group including regions displayed on a digest screen and a region merged with displayed regions in response to a detail display of the displayed regions is required;

means for creating control information for controlling a display of the detail screen, wherein the means for deciding the display content of the detail screen creates a digest of the detail screen based on the control information when the region group is too large to fit in the required display area;

wherein the means for deciding the display content of the digest screen further includes means for changing the display content of the digest screen based on an operation of a user;

wherein the changing means includes means for automatically changing the display content of the digest screen, accompanying the operation of the user;

means for transmitting information for creating the digest of the document the layout of which is determined to a client terminal together with the document;

means for obtaining display priorities of a plurality of display elements belonging to each of a plurality of regions of the document based on attributes of the display elements;
means for creating layout information for the regions in the document; and

wherein the means for obtaining the display priorities further comprises:
means for arraying, for each of the regions, the display elements belonging to the regions in accordance with a predetermined criterion,

means for obtaining a ratio of a cumulative length of each of the arrayed display elements in each of the regions by dividing the cumulative length by a total length of the region, and

means for dividing the ratio of the cumulative length by a significance of the region to which the display element belongs, the ratio having been obtained for each of the display elements.